QT-Brightek Chip LED Series

SMD 0603 LED

Part No.: QBLP601 series

Table of Contents:

Introduction 3
Electrical / Optical Characteristic (Ta=25 ºC) 4
Absolute Maximum Rating 4
CIE Chromaticity Diagram 7
Solder Profile & Footprint 10
Packing 11
Labeling 12
Ordering Information 12
Revision History 13
Disclaimer 13

Introduction

Feature:

- Water clear lens
- Yellow diffused lens for IW
- Package in tape and reel
- Ultra bright 0603 LED package
- InGaN technology for IB/IG/IW
- AlInGaP technology for R/S/AG/Y/O
- Viewing Angle = 140 deg typ.
- Height profile: 0.6mm

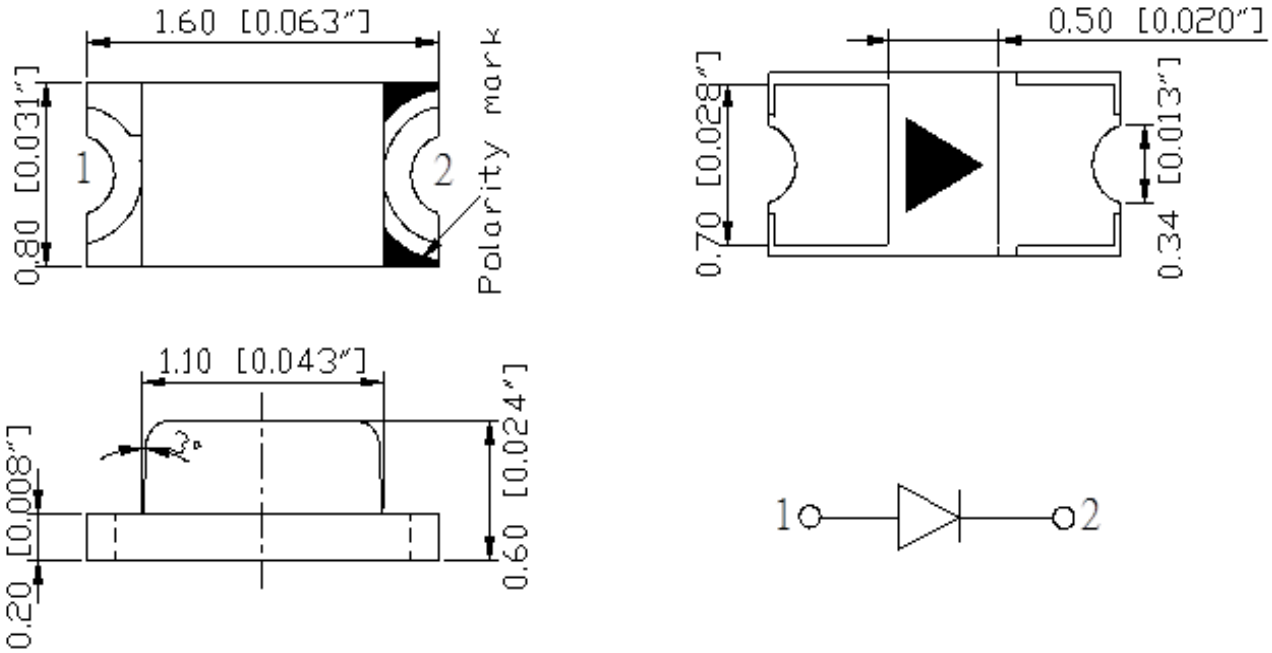
Application:

- Status indication
- Back lighting application

Certification & Compliance:

- ISO9001
- RoHS Compliant

Dimension:



Units: mm / tolerance = +/-0.1mm

Electrical / Optical Characteristic (Ta=25 °C)

Product	Color	I_F (mA)	V_F (V)		λ_D (nm)			λ_P (nm)	I_V (mcd)	
			Typ.	Max.	Min.	Typ.	Max.	Typ.	Min.	Typ.
QBLP601-S	Deep Red	20	2.0	2.5	630	640	650	650	25	45
QBLP601-R	Red	20	2.0	2.5	620	625	630	640	80	100
QBLP601-O	Orange	20	2.0	2.5	600	605	610	610	80	165
QBLP601-Y	Yellow	20	2.0	2.5	585	590	595	590	80	165
QBLP601-AG	Yellow Green	20	2.0	2.5	565	570	576	574	32	45
QBLP601-IG	True Green	20	3.2	3.7	520	525	530	520	250	450
QBLP601-IB	Blue	20	3.2	3.7	465	470	475	468	50	100
QBLP601-IW	White	20	3.2	3.7	-	X=0.28 Y=0.26	-	-	200	330

Absolute Maximum Rating

Chip Material	P_d (mW)	I_F (mA)	I_{FP} (mA)*	V_R (V)	T_{OP} (°C)	T_{ST} (°C)	T_{SOL} (°C)**
AlInGaP (R/S/AG/Y/O)	75	30	100	5	-40 ~ +80	-40 ~ +100	260
InGaN (IG/IB/IW)	111	30	100	5	-40 ~ +80	-40 ~ +100	260

*Duty 1/10 @ 1KHz

**IR Reflow for no more than 10 sec @ 260 °C

Forward Voltage V_F @ I_F=20mA

Bin	Min.	Max.	Unit
b	1.6	1.9	V
c	1.9	2.2	
d	2.2	2.5	
e	2.5	2.8	
f	2.8	3.1	
g	3.1	3.4	
h	3.4	3.7	

Luminous Intensity I_V @ I_F=20mA

Bin	Min.	Max.	Unit
D	25	32	mcd
E	32	40	
F	40	50	
G	50	63	
H	63	80	
I	80	100	
J	100	125	
K	125	160	
L	160	200	
M	200	250	
N	250	320	
O	320	400	
P	400	500	
Q	500	630	
R	630	800	

Dominant Wavelength λ_D for Blue @ I_F=20mA

Bin	Min.	Max.	Unit
G	465	467.5	nm
H	467.5	470	
I	470	472.5	
J	472.5	475	

Dominant Wavelength λ_D for True Green @ I_F=20mA

Bin	Min.	Max.	Unit
U	520	522.5	nm
V	522.5	525	
W	525	527.5	
X	527.5	530	

Dominant Wavelength λ_D for Red @ I_F=20mA

Bin	Min.	Max.	Unit
t	620	625	nm
u	625	630	

Dominant Wavelength λ_D for Deep Red @ I_F=20mA

Bin	Min.	Max.	Unit
v	630	635	nm
w	635	650	

Dominant Wavelength λ_D for Yellow Green @ I_F=20mA

Bin	Min.	Max.	Unit
h	565	568	nm
i	568	572	
j	572	576	

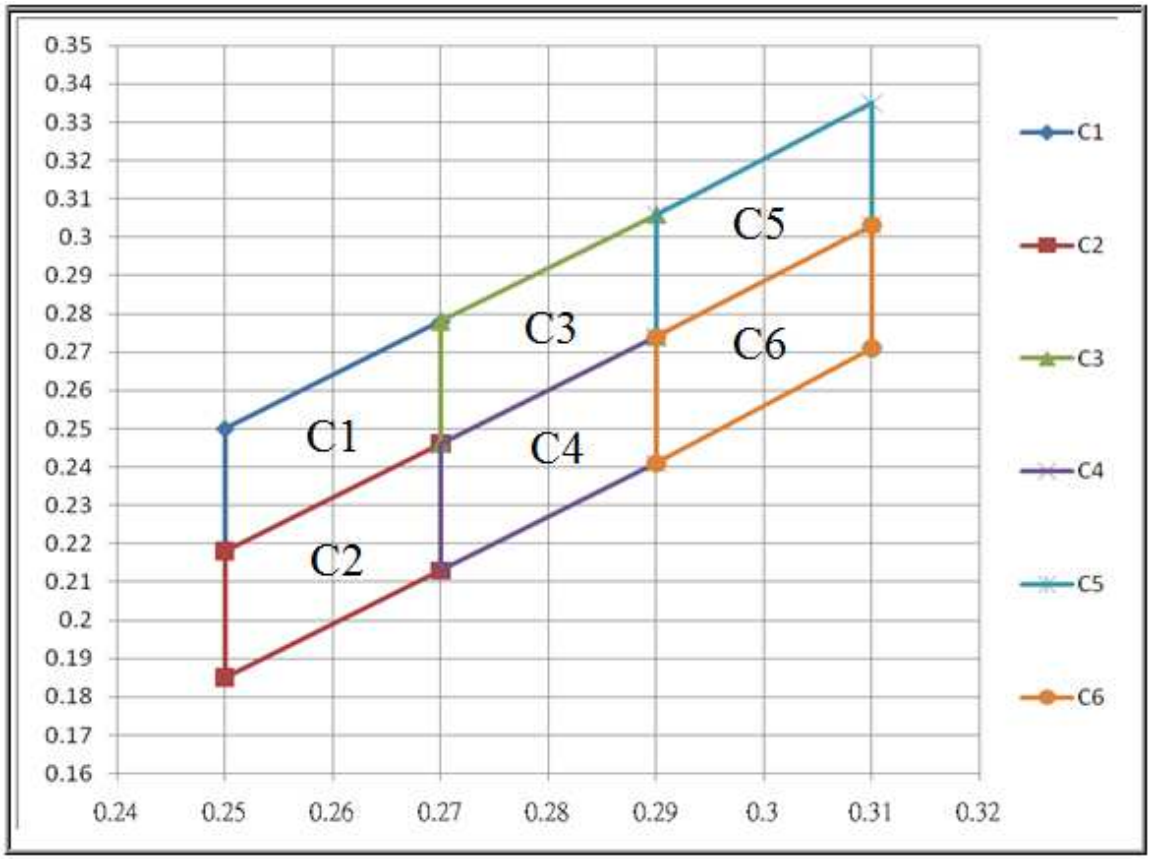
Dominant Wavelength λ_D for Yellow @ I_F=20mA

Bin	Min.	Max.	Unit
m	585	590	nm
n	590	595	

Dominant Wavelength λ_D for Orange @ I_F=20mA

Bin	Min.	Max.	Unit
p	600	605	nm
q	605	610	

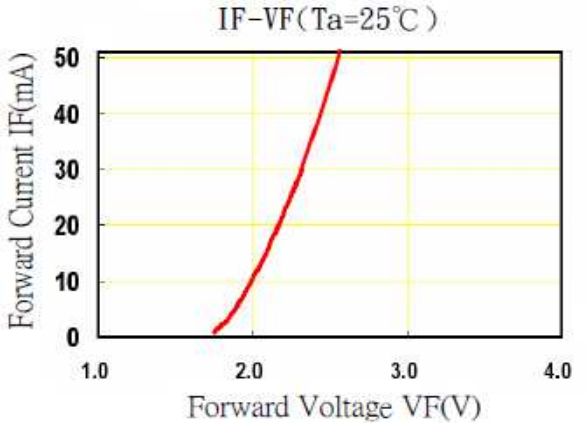
CIE Chromaticity Diagram

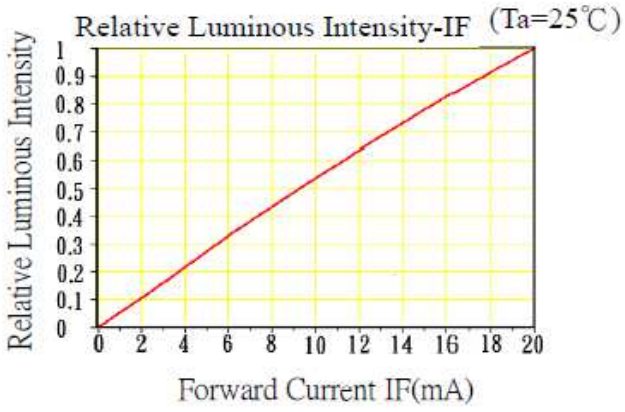


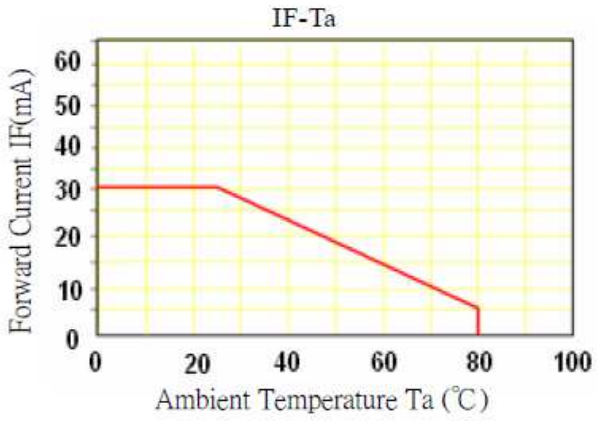
Chromaticity coordinates Ranks combination (IF=20mA)					
Rank	Chromaticity coordinates				
C1	X	0.250	0.250	0.270	0.270
	Y	0.218	0.250	0.278	0.246
C2	X	0.250	0.250	0.270	0.270
	Y	0.185	0.218	0.246	0.213
C3	X	0.270	0.270	0.290	0.290
	Y	0.246	0.278	0.306	0.274
C4	X	0.270	0.270	0.290	0.290
	Y	0.213	0.246	0.274	0.241
C5	X	0.290	0.290	0.310	0.310
	Y	0.274	0.306	0.335	0.303
C6	X	0.290	0.290	0.310	0.310
	Y	0.241	0.274	0.303	0.271

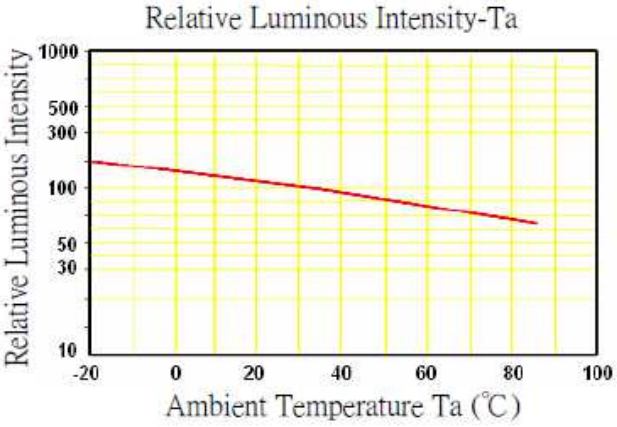
Characteristic Curves

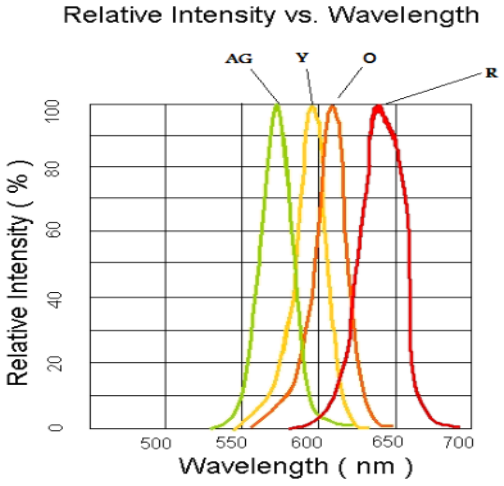
AlInGaP (R/S/AG/Y/O)

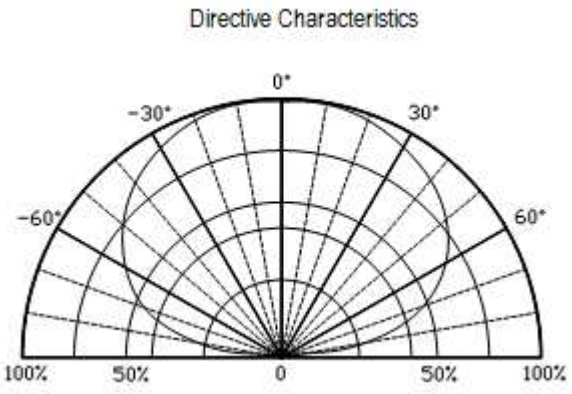




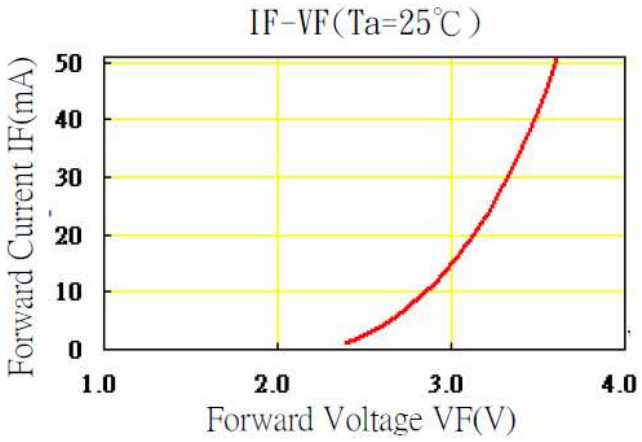


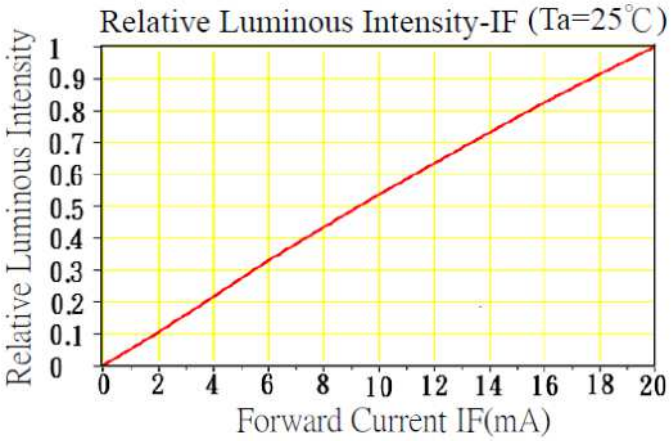


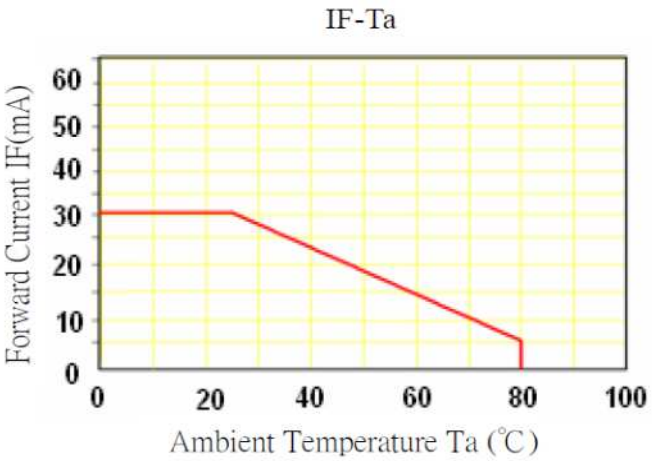


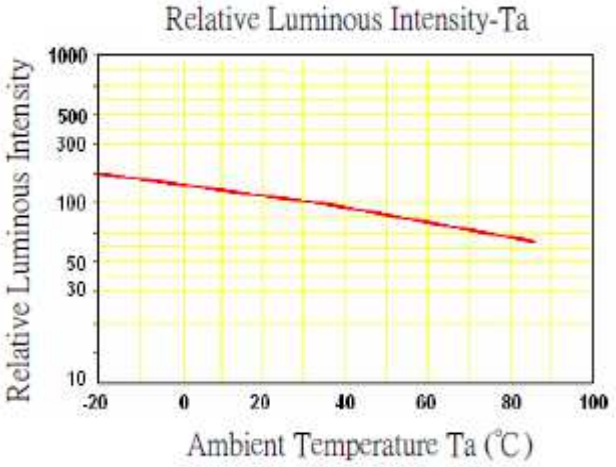


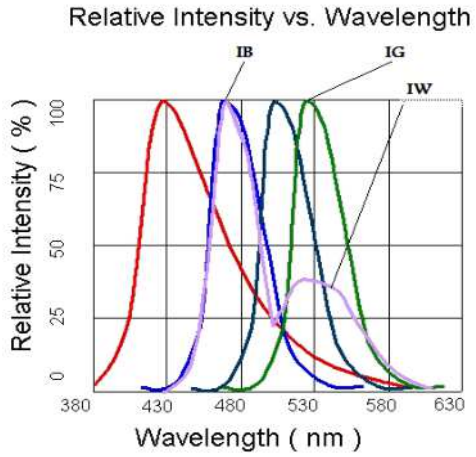
InGaN (IB/IG/IW)

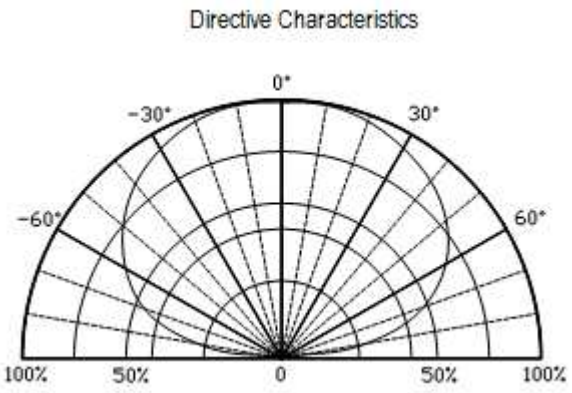






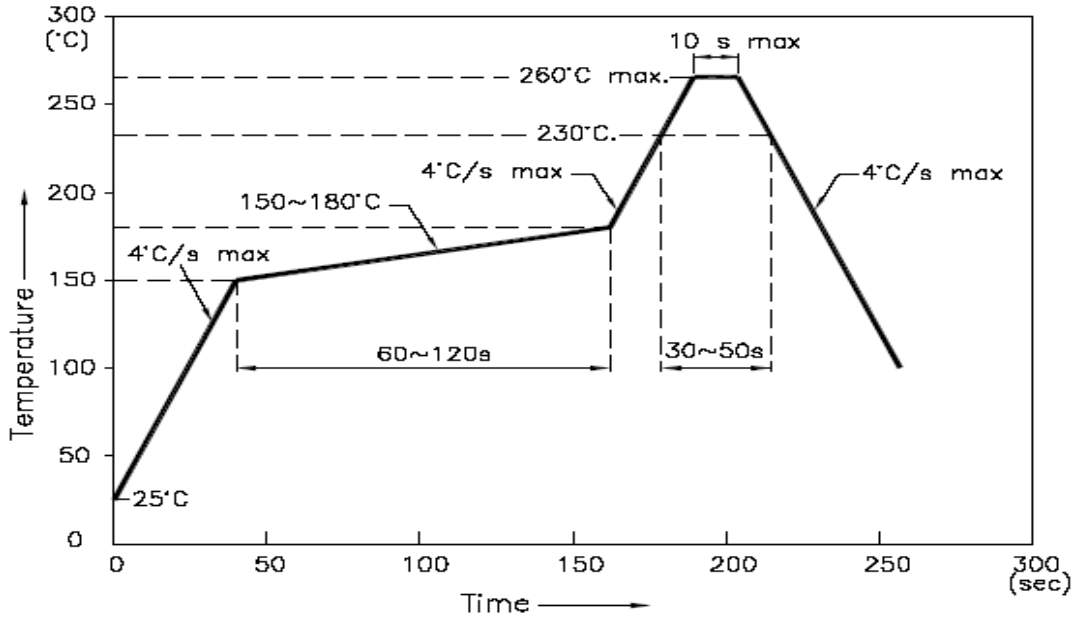




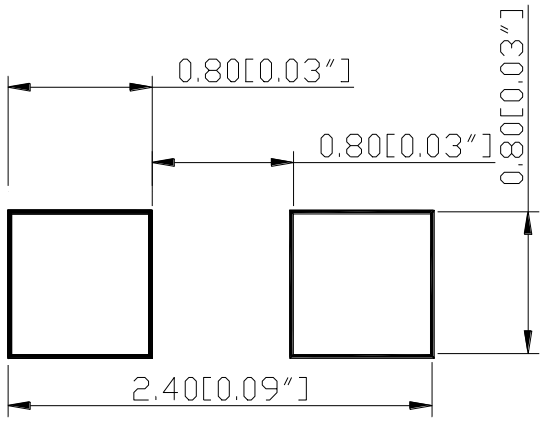


Solder Profile & Footprint

-Recommended tin solder specifications: melting temperature in the range of 178~192 ^{O}C
-The recommended reflow soldering profile is as follows (temperatures indicated are as measured on the surface of the LED resin):



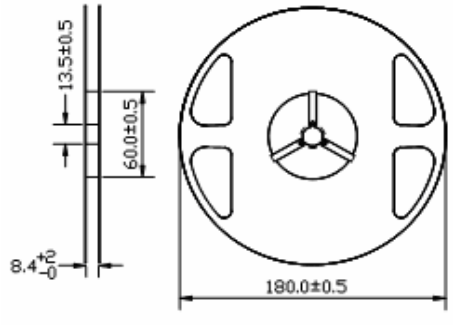
Recommended Pad Layout



Units: mm Tolerance: ± 0.1mm

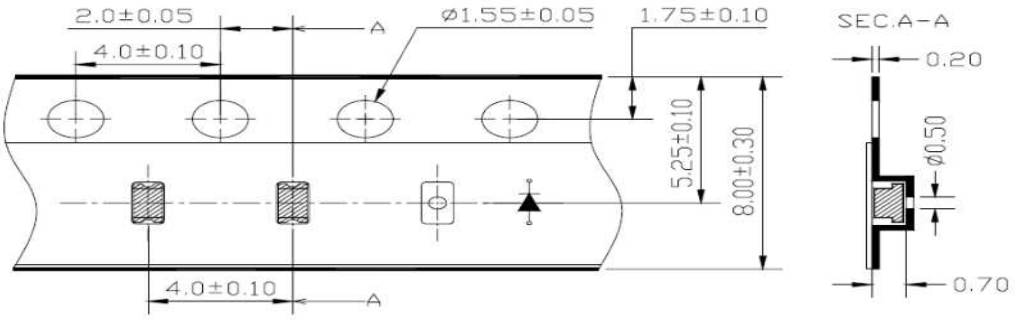
Packing

Reel Dimension:



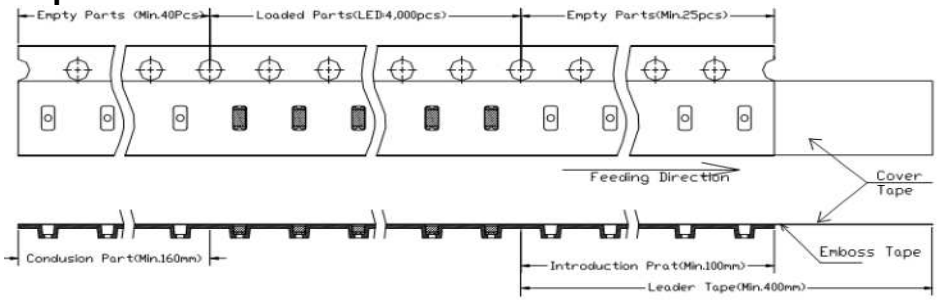
Unit: mm

Tape Dimension:

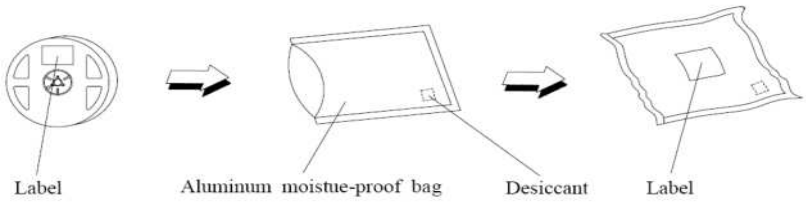


Unit: mm

Arrangement of Tape:



Packaging Specifications:



Labeling



Ordering Information

Orderable Part #	Spec Range	Quantity per reel
QBLP601-S	Iv=45mcd Typ. @ I_F=20mA / Color=630nm-635nm	4,000 units
QBLP601-R	Iv=100mcd Typ. @ I_F=20mA / Color=620nm-630nm	4,000 units
QBLP601-O	Iv=165mcd Typ. @ I_F=20mA / Color=620nm-630nm	4,000 units
QBLP601-Y	Iv=150mcd Typ. @ I_F=20mA / Color=585nm-595nm	4,000 units
QBLP601-AG	Iv=45mcd Typ. @ I_F=20mA / Color=565nm-576nm	4,000 units
QBLP601-IG	Iv=450mcd Typ. @ I_F=20mA / Color=520nm-530nm	4,000 units
QBLP601-IB	Iv=100mcd Typ. @ I_F=20mA / Color=465nm-475nm	4,000 units
QBLP601-IW	Iv=330mcd Typ. @ I_F=20mA / CCT: (X=0.28, Y=0.26) typ.	4,000 units

Revision History

Description:	Revision #	Revision Date
New Release of QBLP601 series	V1.0	9/20/2010
Update opto specifications	V2.0	02/03/2011
Added QBLP601-O	V2.1	06/16/2011
Added Bin Code/ update Electrical/ Optical Characteristic	V2.2	10/04/2011
Update Format	V2.3	03/23/2012
Update orange brightness	V2.4	06/07/2012
Update white (x,y) coordinates	V2.5	05/30/2013
Update outline dimensions and spec	V3.0	11/04/2013
Information update	V3.1	02/13/2014
Add deep red (QBLP601-S)	V3.2	11/13/2014
Update Viewing Angle	V3.3	09/27/2021
Add peak wavelength and update typ. mcd value for blue	V3.4	01/15/2025

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QT-BRIGHTEK's products are not authorized for use as critical components in life support devices or systems without the express written approval of QT-BRIGHTEK. As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury of the user.

2. A critical component in any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.